Party Time!

An Instructional Unit of Data Analysis and Statistics

Brief Overview:

In this unit students have the chance to create a great birthday bash but not before they collect, organize, and display planning data in tally charts and along line plots. They will also use statistical concepts of mean, median, mode and range to analyze the data. And to help form predictions for a successful celebration, students will apply basic concepts of probability. Afterwards, it's "Party Time!"

NCTM Content Standard/National Science Education Standard:

- Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- Select and use appropriate statistical methods to analyze data;
- Develop and evaluate inferences and predictions that are based on data;
- Understand and apply basic concepts of probability.

Grade/Level:

Grade 4

Duration/Length:

Three lessons – 60 minutes per lesson.

Student Outcomes:

Students will:

- Ask questions in order to gather data.
- Pose questions in order to collect data.
- Use tally charts and line plots in order to collect, organize and display data.
- Use median mode, range, and mean in order to analyze and interpret data.
- Use fractions in order to express the probability of an event.

Materials and Resources:

Lesson 1:

- Pre-Assessment - Student Resource 1
- lined chart paper
- student copies of Birth Month Tally charts
- student copies of centimeter grid paper
- markers

- string
- 5 pieces of poster board
- scissors
- overhead transparency
- student Math journals
- student copies of the "Talking Line Plots"
- Reteach - Student Resource
- Extension - Student Resource

Lesson 2:

- Pre-assessment - Student Resource 2
- 6 - "Pin the Tail on the Donkey" games
- measuring tapes
- student copies of "Donkey Distance" tally charts
- transparency - "Donkey Distance" tally chart
- vocabulary flip charts (Pre-cut and pre-folded)
- lined chart paper
- student copies of Exit Tickets: Median, Mode, Mean and Range
- Reteach - Student Resource
- Extension - Student Resource

Lesson 3

- Pre-assessment - Student Resource 3
- student copies of "Party Tunes" tally chart
- lined chart paper
- student copies of "Favorite Ice Cream Flavor" tally chart
- students copies of Exit Tickets: Probability and Fractions
- Reteach - Student Resource
- Extension - Student Resource
- Summative Assessment

Development/Procedures:

Lesson 1 "People Plots"

Pre-assessment

- Students complete an exercise requiring knowledge of line plots (Reading Plots) Student Resource1. Answers can be found on Teacher Resource1.
- Students should have experience with tally charts and bar graphs prior to this lesson.

Launch

- Pose general questions regarding student birthdays. Record responses in a tally chart as students answer questions by raising one hand. ("How many of

you will celebrate your birthday this month?", "Which birth month is most widely shared among you?", "Were any of you born on the same day?"). These are all meaningful questions that may generate data that can be displayed on a line plot.

- Announce and post today's key question: "How do we interpret line plots?"

Teacher Facilitation

- Distribute copies of tally charts and line plots to students. "Birth Month Tally Chart" - Student Resource 2, Teacher Resource 2, and grid paper.
- Take the class outside, into an empty hallway, or gymnasium to assimilate a line plot of the birthday data. Tell them one would normally use paper, pencils, lines and x's to make a line plot but today we are making a "Human Line Plot".
- Lay a piece of string on the ground. You may need to position paper weights at the ends of the string for some stability. Tell the group that this string represents the number line of a line plot.
- Distribute twelve posters,with the numbers 1 to 12 on them.
- Direct the 12 students to align themselves along the number line string with their arms spread out wide from their sides. This should create equal intervals of space between each student as numbers are listed along number lines among equal intervals..).
- Give one student the "title" poster to hold. Position the student at what would be the top of the line plot.
- All line plots have meaningful titles that relate to the data they display. The title of this line plot is "Student Birth Months".
- The remaining students should line up behind the number of their birth month. They will be the X's on the "human" line plot. All line plots use X's or other symbols to represent data.
- All students holding posters (title,numbers) should lay their posters neatly on the ground where they stand and line up behind the numbers of their birth months.
- Tell students to stay where they are as you record the data in the transparency "Student Birth Months". Also, pose the following questions and give support as needed.

  How many students were born during the month of January? (February, March, or April, etc.).
  Which month has the greatest amount of student birthdays?
  Which month has the least amount of student birthdays?
  What is the difference between the amount of birthdays for the months of May and August?
  If we were to get a new student, can you predict his or her birth month? Why or why not?
- Back in the classroom; transfer your data to a large class line plot on lined chart paper. Tell students this is a paper/pencil version of the same data you represented outside.

- Give a personal interpretation based upon the trends you see.
- Be sure to identify any outliers and how they may be interpreted, any clusters and how they may be interpreted, as well as any gaps and how they may be interpreted.
- Help students to define the terms outlier, cluster, and gap in their Math journals.

  Outlier - any points that are distinctly far away from the remaining data.
  Cluster - points that cluster or pile up closely together .
  Gaps - spaces between clusters.

Student Application

- Tell students, it is their turn to collect, organize, display, and interpret data.
- Explain that at the end of the unit they will have a small Birthday Bash but they must plan the celebration themselves and use mathematical concepts to ensure a successful event.
- Encourage students to think of questions to include in surveying the class' preferences for various festivities. These questions must have numerical answers.
- Questions should be recorded in student Math journals and assessed later, but for now, students should circle and choose what they consider to be their most important question for surveying classmates. (Ex: "How long will the party last?").
- In groups, students take turns sharing their favorite question to see if others have the same interest. The most highly favored question of the group is posted on a large group tally chart along with appropriately headed rows and columns. The charts will be used to survey the whole class and to provide data for the next task.
- Groups rotate quickly from group chart to group chart assigning tally marks beside their preferred choice of festivities.
- Students individually construct and correctly display the data collected on a line plot. Distribute grid paper
- Bring student's attention back to today's key question.
- Ask again, "How do we interpret line plots?" (Use facts from the teacher facilitation section to help form a more concise and permanent explanation of your preference to post in your classroom).
- Students answer orally.
- Record responses and give support to ensure everyone has the appropriate understanding.
- Students record the same information in their Math journals.

Embedded Assessment

- Assess students' questions. (Can the questions produce viable data?)
- Assess students' line plots - Are all of the components present (title, key, X's,

number line)? Are there any outliers, clusters, or gaps?

- Students complete the writing assignment, "Back Talk" - Student Resource 3, Teacher Resource 3.

Re-teaching/Extension

- Students who need extra support with the lesson, complete the activity, "My Favorite Ice Cream" with the teacher in order to review what is needed. Student Resource 4, Teacher Resource 4.
- Students who have understood the lesson, complete the activity "Soccer Goals" in order to further master the concept. Student Resource 5, Teacher Resource 5.

Lesson 2 "Pin It!"

Pre-assessment

- Students complete a pre-assessment activity, "Student Resource 6", Teacher Resource 6.

Launch

- Pose the question: Have you ever played the game, "Pin the Tail on the Donkey?" Briefly explain, "Pin the Tail on the Donkey", is a game that many children play at birthday parties. Players try to pin a tail on the image of a donkey while blind folded. Whoever pins their tail nearest the target wins.
- In groups, students play a game of "Pin the Tail on the Donkey".
- They measure the distances between their tails and the actual targets to the nearest centimeter.
- Record and organize data in the tally table, "Distant Donkeys". Student Resource 7, Teacher Resource 7.
- Have students combine data and make a class line plot.
- How many of you are curious to know the typical distance the tails were from the target?Finding the median, mode, mean, and range of the data can help us determine the typical accuracy of our class in pinning the tail on the donkey and draw more meaningful conclusions.

Teacher Facilitation

- Announce and post today's key question: "How do we determine median, mode, and range in order to describe a set of data?"
- Distribute construction paper for vocabulary flip charts and help students label and define median, mode, range, and mean. Student Resource 8, Teacher Resource 8.
- Explain and discuss the following vocabulary:

- Median - the value found in the middle of all values when listed in order from the smallest to the largest value
- Mode - the value found most often in one set of data.
- Range - the difference between the smallest and largest value in a set of data.
- Mean - the average value of a set of data; calculated by adding all values in a set of data and dividing their sum by the number of values in that data set.
- Using a transparency of the chart you completed during the game of "Pin the Tail on the Donkey", show students how to find the median among the data.
- Encourage students to refer to their vocabulary flip chart whenever necessary.
- Give your personal interpretation of the particular median you found. (Tell students what the outcome means to you).
- Show students how to find the mode among the data.
- Give your personal interpretation the particular mode you find.
- Show students how to find the range using the data.
- Give your personal interpretation of the particular range you find.
- Show students how to find the mean among the data.
- Give your personal interpretation of the particular mean you find.

Student Application

- Assign students to different groups.
- Students play another game of "Pin the Tail on the Donkey" again measuring the distance between their pinned tails and the actual targets to the nearest centimeter.
- Assign jobs as well. One student should be the recorder and two other students should measure distances between target and pinned tails.
- Record and organize data in second set of tables. Student Resource 7, Teacher Resource 7.
- Students will then share data and make a line plot of the class data.
- Independently, with the support of their vocabulary flip charts, students should find the median, mode, range, and mean of data collected.
- Bring students' attention back to today's key question chart.
- Ask again, "How do we determine median, mode, and range in order to describe a set of data?" (Use facts from the teacher facilitation section to help form a more concise and permanent explanation of your preference to post in your classroom).
- Students answer orally.
- Record responses and give support to ensure everyone has appropriate understanding.
- Students record the same information in their Math journals.

Embedded Assessment

- Students complete Exit Ticket: Median, mode, range, and mean. Student Resource 9, Teacher Resource 9.

Re-teaching/Extension

- Those who have not completely understood the lesson, should complete the activity, “Find the Mean, Median, Mode, and Range” with you in order review what is needed. Student Resource 10, Teacher Resource 10.
- For those who have understood the lesson, complete the activity concerning range in order to further develop the concept. Student Resource 11, Teacher Resource 11.

Lesson 3 “Off the Charts”

Pre-assessment

- Students complete pre-assessment: "Probability and Fractions". Student Resource 12, Teacher Resource 12.

Launch

- Share and discuss questions students posed yesterday regarding the upcoming Birthday Bash that were not used in the group tally charts. Explain that while it may be possible to have some of the festivities they inquired about, it is probably impossible to meet everyone’s preferences.
- Tell the students that probability is a measure of the likelihood that an event will occur.
- Announce and post today’s key question: “How can we express probability as a fraction to determine the probability of an event?”
- Ask students, “What kind of music would you like to hear at the celebration?”
- Take a survey using the class "Hot Tunes" tally chart. The chart may include categories of Jazz, Pop, Classical, Rap, Country Western, Rhythm & Blues, Rock N’ Roll, or No particular preference. Student Resource 13, Teacher Resource 13.

Teacher Facilitation

- Introduce the formula for probability:

$$\frac{\text{Desired outcomes}}{\text{Possible outcomes}} = \text{Probability}$$

- Model and find the probability that Jazz music will be played at the celebration using the formula above and the class "Hot Tunes" tally chart. Example: Out of the 22 students in the class, only three students would like to hear Jazz music. The fraction for probability would be 3/22. Three is the number of favorable outcomes and 22 is the number of possible outcomes. In

other words, three out of 22 students favor Jazz music.
- Continue modeling and guiding students through this practice exercise.

Student Application

- Tell students it is their turn to express the probability of an event occurring using fractions.
- By a show of hands, students are asked to give their preference for ice cream flavors.
- Data is collected and organized in a tally chart for flavors Peach, Vanilla, Chocolate, Strawberry, Cookie Dough, and Bubble Gum. Student Resource 14, Teacher Resource 14.
- Independently, students use fractions to find the probability that each flavor of ice cream will be served.
- Bring students attention back to today's key question chart.
- Ask again, "How can we express probability as a fraction to determine the probability of an event?" (Use facts from the teacher facilitation section to help form a more concise and permanent explanation of your preference to post in your classroom).
- Students answer orally. Teacher records sufficient responses to ensure everyone has an appropriate understanding.
- Students record the same information in their Math journals for future reference.

Embedded Assessment

- Students will complete an exit ticket interpreting ice cream flavor outcomes. Student Resource 15, Teacher Resource 15.

Re-teaching/Extension

- Students, who need extra support with the lesson, complete the activity, "Probability with Spinners", with the teacher in order to review what is needed. Student Resource 16, Teacher Resource 16.
- Students, who did well on the assessment, should complete the activity "Probability with Spinners", to expand their understanding. Student Resource 17, Teacher Resource 17.

Summative Assessment:

- Students will answer a Selected Response (SR) item and a Brief Constructed Response (BCR) item similar to MSA assessments. Student Resource 18, Teacher Resource 18.

Appendix A: Teacher Resources

Teacher Resource1: Pre-Assessment Lesson1: “Reading Plots”
Teacher Resource 2: “Student Birth Months” -tally chart
Teacher Resource 3: "Back Talk"
Teacher Resource 4: Re-teach Activity: ‘My Favorite Ice Cream”
Teacher Resource 5: Extension Activity: “Soccer Goals”
Teacher Resource 6: Pre: Assessment: Mean, Median, and Mode”
Teacher Resource7: "Distant Donkeys" - tally chart
Teacher Resource 8: Vocabulary Flip Chart - Mean, mode, median, and range
Teacher Resource 9: Exit Ticket: Mean, mode, median, and range
Teacher Resource 10: Re-teach: “Can You Find the Mean, Mode, Median, and Range?”
Teacher Resource 11: Extension: “The Range of a Set of Data”
Teacher Resource 12:Pre-assessment: Probability/Fractions
Teacher Resource 13:"Hot Tunes" - tally chart
Teacher Resource 14: "Favorite Ice Cream"- tally chart
Teacher Resource 15: Exit Ticket: Probability/Fractions
Teacher Resource 16: Re-teach: “Probability with Spinners”
Teacher Resource 17: Extension: “Probability with Fractions”
Teacher Resource 18: Summative Assessment -BCR

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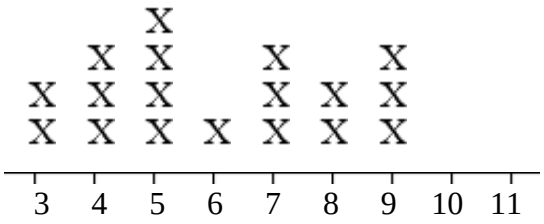
Teacher Resource 1

Reading Plots

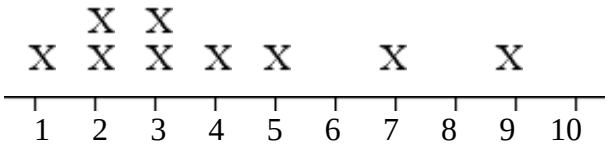
Complete.

1.



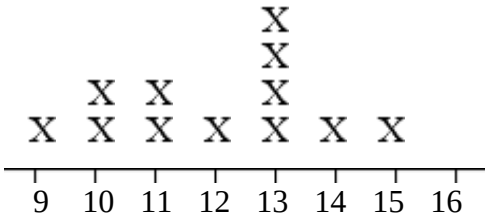
How many students read at least ten books? 0

2.



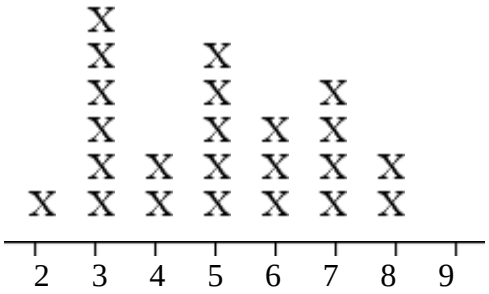
What is the greatest number of books read? 2

3.



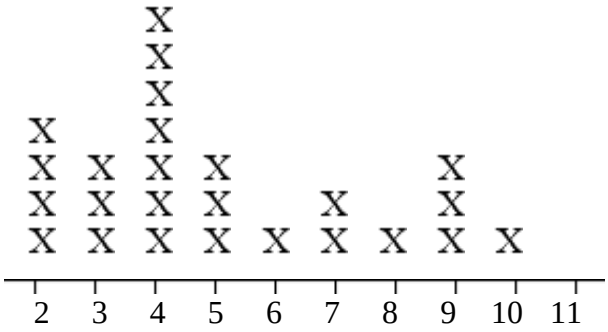
What is the average number of books read so far? 12

4.



How many students read more than four books? 14

5.



How many students read exactly three books? 3

Teacher Resource 2

Birth Month Tally Chart

Month	Tally	Total
January	Data will vary per class.	
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

Teacher Resource 3

Back Talk
If line plots could speak…

What would a line plot say about the job it performed for you in today's final assignment?

Where did its data come from?

Did it use any words, numbers, or symbols to help you?

What did it try to tell you about the data? (Draw a conclusion)

How does the line plot feel about helping you and others?

Write a creative paragraph below from the viewpoint of a hard working line plot.

_____

Paragraph should answer the five questions above. (5 points)

_____

Response shows creativity. (2 points)

_____

_____

_____

_____

_____

_____

_____

Teacher Resource 4

My Favorite Ice Cream

Use the tally table to answer the questions.

1. Favorite Ice Cream Flavor

Flavor	Tally	Number
Peach	𝍸	5
Chocolate	𝍸 ||	7
Vanilla	||||	4
Pistachio	𝍸 |||	8
Strawberry	𝍸 |	6
Cookie Dough	||	2

a. What is the least popular ice cream flavor?
Cookie Dough

b. How many fewer people chose chocolate than pistachio?
1

c. What is the most popular ice cream flavor?
Pistachio

2. Favorite Color

Color	Tally	Number
Orange	𝍸 |||	8
Yellow	𝍸	5
Green	||	2
Purple	|||	3
Blue	||||	4
Pink	𝍸 |	6

a. How many fewer people chose yellow than chose orange?
3

b. Did more people choose yellow or orange?
Orange

c. If 2 more people chose purple how many total people would have chosen purple?
5

Use Grid paper to complete the following.

3. Make a line plot using the data from tally chart #1.

4. Make a line plot using the data from tally chart #2.

5. Make a line plot using the data from tally chart #3.

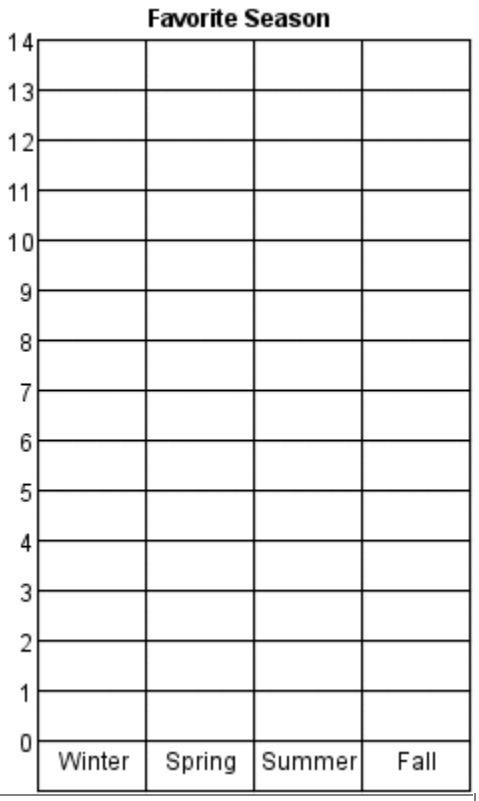
Teacher Resource 5

My Favorite Season

Use the data from the frequency table to color the bar graph.

Favorite Season

Season	Number
Winter	𝍸 |||
Spring	||||
Summer	𝍸 𝍸 ||
Fall	||



1. List the seasons in order from the season with the most votes to the season with the fewest votes.

   summer, winter, spring, fall

2. How many people chose either winter or summer?

   20

3. How many people did not choose fall as their favorite season?

   25

4. What is the most popular season?

   summer

5. What is the least popular season?

   fall

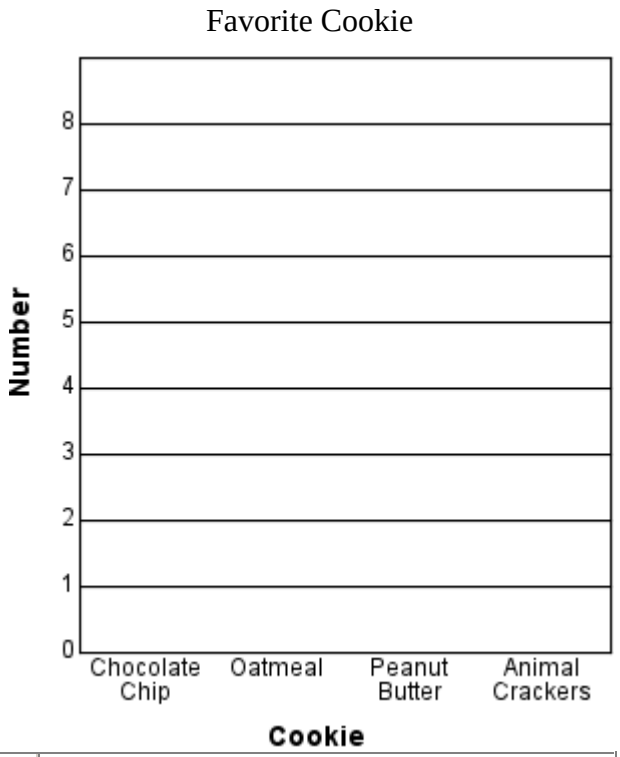
Teacher Resource 6

My Favorite Cookie

Use data from the tally table to make a bar graph. Answer the questions.

Favorite Cookie

Cookie	Tally	Number
Chocolate Chip	𝍸	2
Oatmeal	𝍸 𝍸	7
Peanut Butter	𝍸	4
Animal Crackers	𝍸 𝍸	8
Ginger Snaps	𝍸	6



1. If 3 more people chose chocolate chip how many total people would have chosen chocolate chip? _____	2. How many people chose oatmeal as their favorite cookie? _____
3. How many people did not choose peanut butter as their favorite cookie? _____	4. Did more people choose chocolate chip or oatmeal? _____
5. How many people answered the survey? _____	

Teacher Resource 7

Distant Donkeys

Student	Distance from target (cm)
John	4
Susan	7
Thomas	
Mary	
Terri	
Michael	
Jimmy	
Carol	
Regina	
Billy	
Andrew	

Teacher Resource 8

Vocabulary Flip Chart: Mean, Mode, Median and Range

Use colorful construction paper to make the flip chart below.
Fold the chart in half, vertically.
Fold the chart into 4 sections, horizontally.
Cut along the three folds on the left side of the chart, only.
Label each front flap mean, median, mode, and range.

Inside

	the average value of a set of data; calculated by adding all values in a set of data and dividing their sum by the number of values in that data set.
	the value found most often in one set of data.
	the difference between the smallest and largest value in a set of data.
	the value found in the middle of all values when listed in order from the smallest to the largest value

Outside

	mean
	mode
	range
	median

Teacher Resource #9

Exit Ticket: Mean, Mode, Median, and Range

How do we use mean, mode, median, and range to describe a set of data?

_____

_____

Responses should explain that in a set of data the mean is the average,

_____

the median is the middle value when data is ordered from least to greatest,

_____

the mode is the value that occurs most often, and the range is the difference

_____

between the smallest and largest value. Students should also tell how one or

_____

two of these concepts could help them in a real life situation. (3points)

_____

_____

_____

Teacher Resource 10

Re-teaching extension

Can you find the mean, median, mode and range?

1. Andy has grades of 84, 65, and 76, on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

Answer: 95

2. The weekly salaries of six employees at McDonald's are $140, $200, $90, $180, $140, and $200. For these six salaries, find:
(a) Mean _____
(b) Median _____
(c) Mode _____

Answers: Mean is $158, Median is $160, Mode is $140

3. Test scores for a class of 10 students are as follows:
78, 86, 100, 85, 92, 72, 55, 91, 90, 75

Answer: Mean is 82.4 Median is 85.5 Mode is none

4. Find the range for the data in each question 1 through 3.

Answers: #1 is 30, #2 is $110 and #3 is 45

Teacher Resource 11

Re-teaching/Extension

The Range of a Set of Data

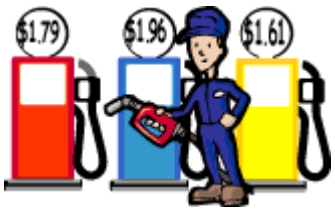
Problem: Cheryl took 7 math tests in one marking period. What is the range of her test scores?

89, 73, 84, 91, 87, 77, 94

Answer is 21

Example 1: The Jaeger family drove through 6 Midwestern states on their summer vacation. Gasoline prices varied from state to state. What is the range of gasoline prices?

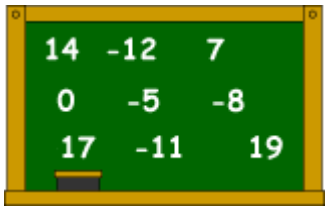
$3.79, $3.61, $3.96, $4.09, $3.84, $3.75



Answer is $.48

Example 2: Ms. Kaiser listed 9 integers on the blackboard. What is the range of these integers?

14, ¯12, 7, 0, ¯5, ¯8, 17, ¯11, 19



Answer is 19

Example 3: A marathon race was completed by 5 participants. What is the range of times given in hours below?

2.7 hr, 8.3 hr, 3.5 hr, 5.1 hr, 4.9 hr

Answer is 5.6 hours

Teacher Resource 12

Probability with Fractions

Find the probability. Write your answer as a fraction in simplest form.

1. A jar contains 20 gray and 23 white marbles. A marble is drawn at random. P(white). 20/43	2. A jar contains 20 blue and 14 gray marbles. A marble is drawn at random. P(blue). 10/17
3. You roll a number cube numbered from 1 to 6. P(a number greater than 5). 1/6	4. A jar contains 25 orange, 16 white, and 4 violet marbles. A marble is drawn at random. P(not orange). 4/9
5. A number from 18 to 25 is drawn at random. P(22). 1/8	6. A jar contains 20 blue and 10 gray marbles. A marble is drawn at random. P(blue). 2/3
7. You roll a number cube numbered from 1 to 6. P(not a 5). 5/6	8. A number from 20 to 29 is drawn at random. P(a number divisible by 2). 1/2
9. You roll a number cube numbered from 1 to 6. P(2, 3, 5, 4, or 6). 5/6	10. A number from 14 to 22 is drawn at random. P(an even number). 5/9

Teacher Resource 13

Class Music Tally Chart

Music	Tally	Total
Jazz		
Pop		
Classical		
Rap		
Country Western		
R&B		
Rock N’ Roll		
No Preference		

Teacher Resource 14

Favorite Ice Cream Flavors

Use the tally table to answer the questions.

1. Favorite Ice Cream Flavor

Flavor	Tally	Number
Peach	𝍸	5
Chocolate	𝍸 ||	7
Vanilla	||||	4
Pistachio	𝍸 |||	8
Strawberry	𝍸 |	6
Cookie Dough	||	2

a. What is the least popular ice cream flavor?
cookie dough

b. How many fewer people chose chocolate than chose pistachio?
1

c. What is the most popular ice cream flavor?
chocolate

3. Favorite Color

Color	Tally	Number
Orange	𝍸 |||	8
Yellow	𝍸	5
Green	||	2
Purple	|||	3
Blue	||||	4
Pink	𝍸 |	6

a. How many fewer people chose yellow than chose orange?
3

b. Did more people choose yellow or orange?
orange

c. If 2 more people chose purple how many total people would have chosen purple?
5

Teacher Resource #15

Exit Ticket: Probability and Fractions

How do we use fractions to express probability?

_____

_____

Responses should define probability, describe each part of the formula for probability,
_____

and tells how probability can help us with real life situations. (3 points)

_____

_____

_____

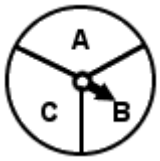
_____

_____

_____

Probability with Spinners

Write the probability of spinning each letter.

1.  The letter C. __1__ out of _5_	2.  The letter C. ___2_ out of _6_	3.  The letter A. _1_ out of __4__	
4.  The letter C. _2_ out of __4__	5.  The letter B. _1_ out of _4___		6.  The letter B. ___1_ out of _7_
7.  The letter G. _2_ out of __7__	8.  The letter B. _1_ out of ___3_	9.  The letter E. _2___ out of _7_	10.  The letter D. __1__ out of _5_

Probability with Fractions

1. A number from 18 to 27 is drawn at random. P(21, 22, or 23) Express the probability as a fraction. 3/10	2. You roll a number cube numbered from 1 to 6. P(6, 3, 5, or 1) Express the probability as a fraction. 4/6
3. You flip a coin. P(tails) 1/2	4. You roll a number cube numbered from 1 to 6. What's the probability of it landing on 5? 1/6
5. There are 5 orange, 3 yellow, and 3 violet marbles in a hat. You pick a yellow marble from the hat. P(yellow marble) 3/11	

Teacher Resource #18

Summative Assessment: Party Time

Selected Response

Balloons Inflated by 4th Grade Students

Balloons	Tally	Total
1	///	3
2	/	1
3	///	3
4	/	1
5		0
6		0
7		0
8	/	1

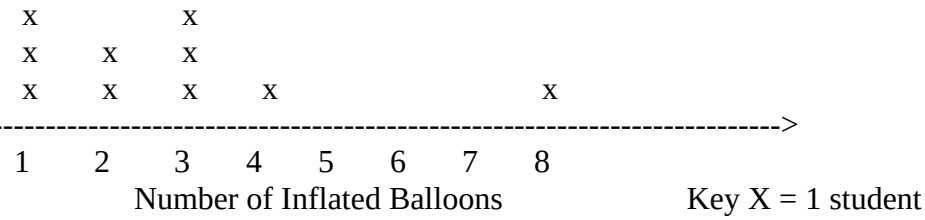
John made a tally chart to show the number of balloons 4th grade students blew up for the party. How many students in John's class blew up 3 or more balloons.
(1 point)

A. 3 *B. 5 C. 2

BCR
John needs to display information in line plots.

Step A: Create a line plot that shows this information. (1 point)

Balloons Inflated by 4th Grade Students



Step B: How do you know your answer is correct?
Tell what you know about line plots.
Use words, numbers, and or symbols in your response.

Responses should identify the components of a line plots and their function. They should give an interpretation for the data displayed. (2 points)_____
_____
_____

Appendix B: Student Resources

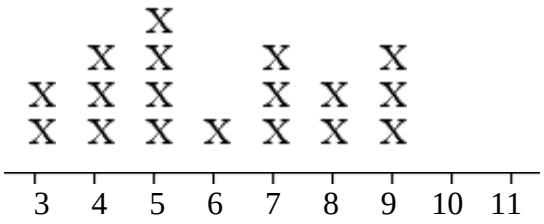
Student Resource1: Pre-Assessment Lesson1: “Reading Plots”
Student Resource 2: “Student Birth Months” -tally chart
Student Resource 3: "Back Talk"
Student Resource 4: Re-teach Activity: ‘My Favorite Ice Cream”
Student Resource 5: Extension Activity: “Soccer Goals”
Student Resource 6: Pre: Assessment: Mean, Median, and Mode”
Student Resource7: "Distant Donkeys" - tally chart
Student Resource 8: Vocabulary Flip Chart - Mean, mode, median, and range
Student Resource 9: Exit Ticket: Mean, mode, median, and range
Student Resource 10: Re-teach: “Can You Find the Mean, Mode, Median, and Range?”
Student Resource 11: Extension: “The Range of a Set of Data”
Student Resource 12:Pre-assessment: Probability/Fractions
Student Resource 13:"Hot Tunes" - tally chart
Student Resource 14: "Favorite Ice Cream"- tally chart
Student Resource 15: Exit Ticket: Probability/Fractions
Student Resource 16: Re-teach: “Probability with Spinners”
Student Resource 17: Extension: “Probability with Fractions”
Student Resource 18: Summative Assessment -BCR

Student Resource 1

Reading Plots

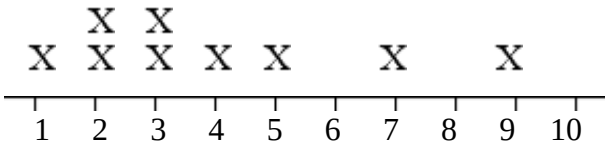
Complete.

1.



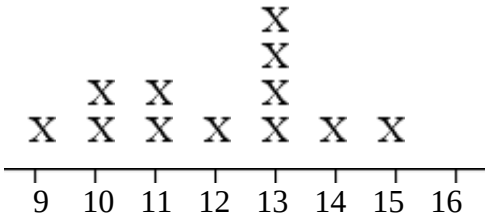
How many students read at least ten books?

2.



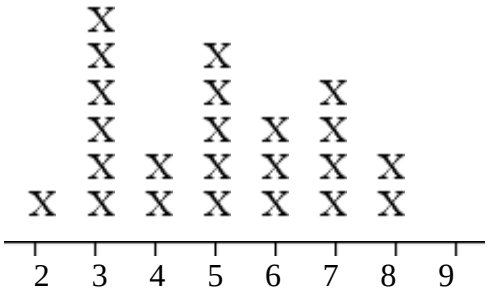
What is the greatest number of books read?

3.



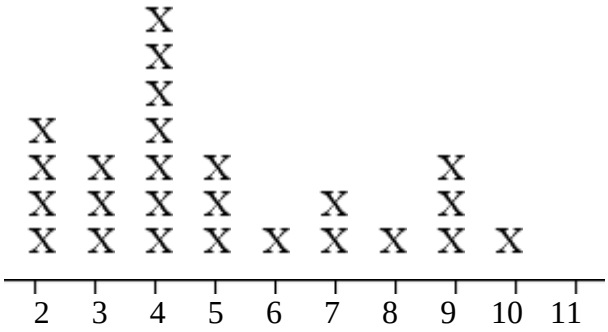
What is the average number of books read so far?

4.



How many students read more than four books?

5.



How many students read exactly three books?

Student Resource 2

Birth Month Tally Chart

Month	Tally	Total
January	Data will vary per class.	
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

Student Resource 3 ‘ Talking Line Plots’

Take a survey. Ask your classmates which of these snacks is their favorite.
Fill in the tally table to show their answers. Complete the tally sheet to show the results.

Snacks Survey

Names of Snacks	Tally	Number of Students
popcorn		
potato chips		
pretzels		
Ice cream		
candy bars		

1. How many more people chose candy bars than chose pretzels? _____	2. How many people answered the survey? _____
3. What is the most popular snack? _____	4. Did more people choose popcorn or potato chips? _____
5. What is the least popular snack? _____	

Student Resource 4

My Favorite Ice Cream

Use the tally table to answer the questions.

1. Favorite Ice Cream Flavor

Flavor	Tally	Number
Peach	𝍸	5
Chocolate	𝍸 ||	7
Vanilla	||||	4
Pistachio	𝍸 |||	8
Strawberry	𝍸 |	6
Cookie Dough	||	2

a. What is the least popular ice cream flavor?

_____

b. How many fewer people chose chocolate than chose pistachio?

_____

c. What is the most popular ice cream flavor?

_____

2. Favorite Color

Color	Tally	Number
Orange	𝍸 |||	8
Yellow	𝍸	5
Green	||	2
Purple	|||	3
Blue	||||	4
Pink	𝍸 |	6

a. How many fewer people chose yellow than chose orange?

_____

b. Did more people choose yellow or orange?

_____

c. If 2 more people chose purple how many total people would have chosen purple?

_____

Use Grid paper to complete the following.

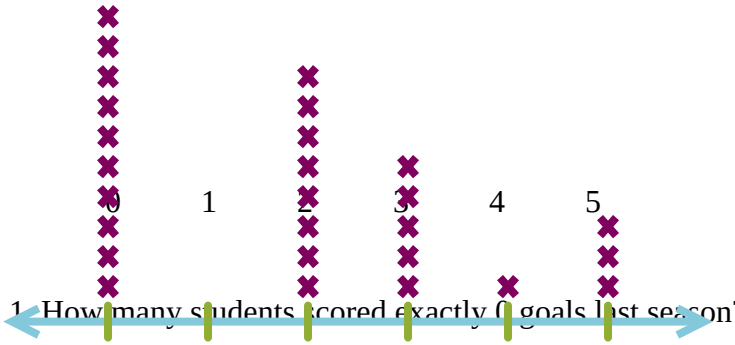
3. Make a line plot using the data from tally chart #1.

4. Make a line plot using the data from tally chart #2.

5. Make a line plot using the data from tally chart #3.

Student Resource 5

Soccer Goals



1. How many students scored exactly 0 goals last season?

2. How many students scored at least three goals last season?

3. How many students scored five goals?

4. Are their any outliers among the data? If yes, what could this mean?

5. Does the data form clusters? If yes, what could this mean?

6. Are their any gaps among the data? If yes, what could this mean?

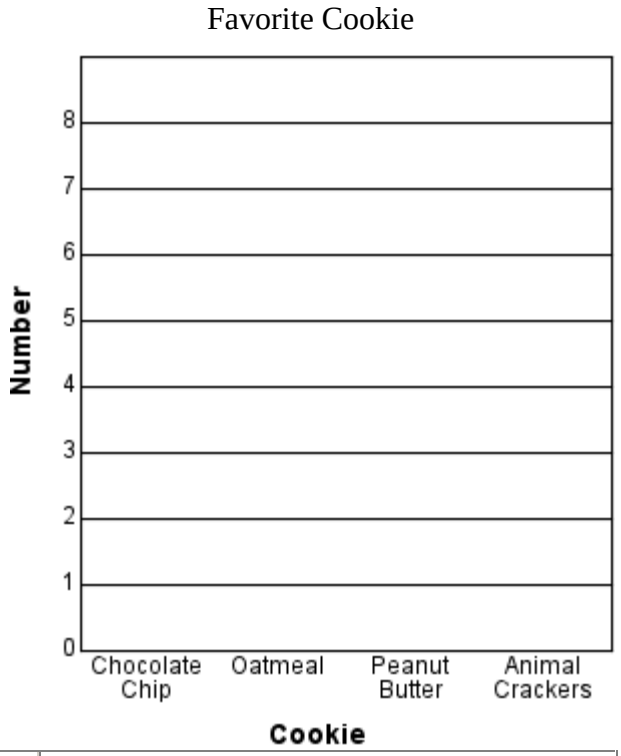
Student Resource 6

MY FAVORITE COOKIE

Use data from the tally table to make a bar graph. Answer the questions.

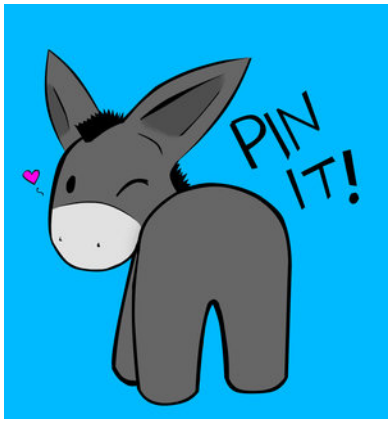
Favorite Cookie

Cookie	Tally	Number
Chocolate Chip	𝍸	2
Oatmeal	𝍸 ||	7
Peanut Butter	||||	4
Animal Crackers	𝍸 |||	8
Ginger Snaps	𝍸 |	6



1. If 3 more people chose chocolate chip how many total people would have chosen chocolate chip? _____	2. How many people chose oatmeal as their favorite cookie? _____
3. How many people did not choose peanut butter as their favorite cookie? _____	4. Did more people choose chocolate chip or oatmeal? _____
5. How many people answered the survey? _____	

Teacher Resource 7



Distant Donkeys

Student	Distance from target (cm)

Student Resource 8

Vocabulary Flip Chart: Mean, Mode, Median and Range

Use colorful construction paper to make the flip chart below.
Fold the chart in half, vertically.
Fold the chart into 4 sections, horizontally.
Cut along the three folds on the left side of the chart, only.
Label each front flap mean, median, mode, and range.

Inside

	.

Outside

	mean
	mode
	range
	median

Student Resource #9

Exit Ticket: Mean, Mode, Median, and Range

How do we use mean, mode, median, and range to describe a set of data?

_____

_____

_____

_____

_____

_____

_____

_____

_____

Teacher Resource 10

Re-teaching extension

Can you find the mean, median, mode and range?

1. Andy has grades of 84, 65, and 76, on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

2. The weekly salaries of six employees at McDonald's are $140, $200, $90, $180, $140, and $200. For these six salaries, find:
(a) Mean _____
(b) Median _____
(c) Mode _____

3. Test scores for a class of 10 students are as follows:
78, 86, 100, 85, 92, 72, 55, 91, 90, 75

4.Find the range for the data in each question 1 through 3.

Student Resource 11

Re-teaching/Extension

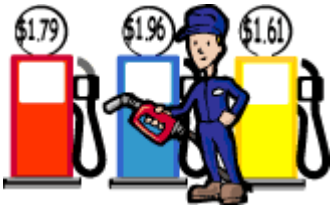
The Range of a Set of Data

Problem: Cheryl took 7 math tests in one marking period. What is the range of her test scores?

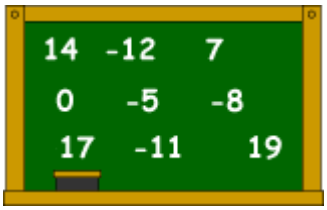
89, 73, 84, 91, 87, 77, 94

Example 1: The Jaeger family drove through 6 midwestern states on their summer vacation. Gasoline prices varied from state to state. What is the range of gasoline prices?

$3.79, $3.61, $3.96, $4.09, $3.84, $3.75



Example 2: Ms. Kaiser listed 9 integers on the blackboard. What is the range of these integers?
14, ¯12, 7, 0, ¯5, ¯8, 17, ¯11, 19



Example 3: A marathon race was completed by 5 participants. What is the range of times given in hours below?

2.7 hr, 8.3 hr, 3.5 hr, 5.1 hr, 4.9 hr

Probability with Fractions

Find the probability. Write your answer as a fraction in simplest form.

1. A jar contains 20 gray and 23 white marbles. A marble is drawn at random. P(white).	2. A jar contains 20 blue and 14 gray marbles. A marble is drawn at random. P(blue).
3. You roll a number cube numbered from 1 to 6. P(a number greater than 5).	4. A jar contains 25 orange, 16 white, and 4 violet marbles. A marble is drawn at random. P(not orange).
5. A number from 18 to 25 is drawn at random. P(22).	6. A jar contains 20 blue and 14 gray marbles. A marble is drawn at random. P(blue).
7. You roll a number cube numbered from 1 to 6. P(not a 5).	8. A number from 20 to 29 is drawn at random. P(a number divisible by 2).
9. You roll a number cube numbered from 1 to 6. P(2, 3, 5, 4, or 6).	10. A number from 14 to 22 is drawn at random. P(an even number).

Teacher Resource 13

Hot Tunes

Music	Tally	Total
Jazz		
Pop		
Classical		
Rap		
Country Western		
R&B		
Rock N’ Roll		
No Preference		

Student Resource 14

Favorite Ice Cream Flavors

Use the tally table to answer the questions.

1. Favorite Ice Cream Flavor

Flavor	Tally	Number
Peach	𝍸	5
Chocolate	𝍸 ||	7
Vanilla	||||	4
Pistachio	𝍸 |||	8
Strawberry	𝍸 |	6
Cookie Dough	||	2

a. What is the least popular ice cream flavor?

_____

b. How many fewer people chose chocolate than chose pistachio?

_____

c. What is the most popular ice cream flavor?

_____

3. Favorite Color

Color	Tally	Number
Orange	𝍸 |||	8
Yellow	𝍸	5
Green	||	2
Purple	|||	3
Blue	||||	4
Pink	𝍸 |	6

a. How many fewer people chose yellow than chose orange?

_____

b. Did more people choose yellow or orange?

_____

c. If 2 more people chose purple how many total people would have chosen purple?

_____

Student Resource #15

Exit Ticket: Probability and Fractions

How do we use fractions to express probability?

_____

_____

_____

_____

_____

_____

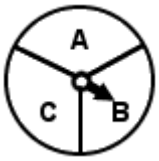
_____

_____

Student Resource 16

Probability with Spinners

Write the probability of spinning each letter.

1.  The letter C. ____ out of _5_	2.  The letter C. ____ out of _6_	3.  The letter A. _1_ out of ____	
4.  The letter C. _2_ out of ____	5.  The letter B. _1_ out of ____		6.  The letter B. ____ out of _7_
7.  The letter G. _2_ out of ____	8.  The letter B. _1_ out of ____	9.  The letter E. ____ out of _7_	10.  The letter D. ____ out of _5_

Student Resource 17

Probability with Fractions

1. A number from 18 to 27 is drawn at random. P(21, 22, or 23) Express the probability as a fraction.	2. You roll a number cube numbered from 1 to 6. P(6, 3, 5, or 1) Express the probability as a decimal. Round to the nearest hundredth.

3. You flip a coin. P(tails)	4. You roll a number cube numbered from 1 to 6. P(2)

5. There are 5 orange, 3 yellow, and 3 violet marbles in a hat. You pick a yellow marble from the hat. P(yellow marble)	.

Student Resource #18

Summative Assessment: Party Time

Selected Response

Balloons Inflated by 4th Grade Students

Balloons	Tally	Total
1	///	3
2	/	1
3	///	3
4	/	1
5		0
6		0
7		0
8	/	1

John made a tally chart to show the number of balloons 4th grade students blew up for the party. How many students in John's class blew up 3 or more balloons.

A. 3 B. 5 C. 2

BCR
John needs to display information in line plots.

Step A: Create a line plot that shows this information.

Step B: How do you know your answer is correct?
Tell what you know about line plots.
Use words, numbers, and or symbols in your response.

_____

_____

_____

_____

_____